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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,157	10/26/2001	Koji Tashiro	SCEI 3.0-094	7039

530 7590 10/19/2004

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EXAMINER

VITAL, PIERRE M

ART UNIT

PAPER NUMBER

2188

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/033,157

Applicant(s)

TASHIRO ET AL.

Examiner

Pierre M. Vital

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4,6-8,10-12,18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-4,6-8,10-12,18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/19/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to applicant's communication filed September 2, 2004 in response to PTO Office Action mailed April 30, 2004. The Applicant's remarks and amendments to the claims and/or the specification were considered with the results that follow.
2. Claims 1-19 have been presented for examination in this application. In response to the last Office Action, claims 2-4, 6-8, 10-12 and 18-19 have been amended. Claims 1, 5, 9, 14, 16 and 17 have been canceled. No claims have been added. As a result, claims 2-4, 6-8, 10-12 and 18-19 are now pending in this application.
3. The objection to claim 11 has been withdrawn due to the amendment filed September 2, 2004.
4. The objection to the specification has been withdrawn due to the amendment filed September 2, 2004.

Response to Arguments

5. Applicant's arguments, see Remarks, pages 9-10, filed September 2, 2004, with respect to the rejection(s) of claim(s) 2-4, 6-8, 10-12 and 18-19 under 35 USC 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Lehman (6,032,160).

Lehman discloses a binary buddy system for allocating and freeing blocks wherein each of the buddy segments can be subdivided into two smaller buddy segments and so on until a minimal buddy segment size is reached. All buddy segments are powers of two (col. 1, lines 24-61).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2, 3, 6, 7, 10, 11, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. (US6,490,670) and Lehman (US6,032,160).

As per claim 2, Collins discloses a method for creating a partition in a storage device, the method comprising receiving a request to create a partition having a requested size of 2 to n-th power, where n is a natural number [col. 4, lines 50-53]; and referring to a table containing disposition information of partitions in the storage device [free list 302; Fig. 3; col. 5, lines 50-53], determining whether there is an empty region in the storage device having a size equal to the requested size based on the disposition information and, if so, disposing the partition in that empty region [col. 5, lines 35-49]; and disposing the partition in a region where a partition can be created, the region being a position that can be aligned with the requested size when there is neither a region

Art Unit: 2188

having the requested size nor a region having $2k$ times the requested size [col. 5, lines 9-22, 57-63].

However, Collins does not specifically teach determining, based on the disposition information, whether there is an empty region having a size $2k$ times as large as the requested size (where k is a natural number) when an empty region having the requested size does not exist, and, if so, successively dividing that empty region by 2 until the size of the divided empty region becomes equal to the requested size, and disposing the partition in the divided region of the storage device as recited in the claim.

Lehman discloses a binary buddy system for allocating and freeing blocks wherein each of the buddy segments can be subdivided into two smaller buddy segments and so on until a minimal buddy segment size is reached. All buddy segments are powers of two to provide a high performance space management system that can operate on a wide range of block sizes, thereby allocating and freeing the blocks with great efficiency (col. 1, lines 24-61). Since the technology for implementing the division of the buddy segments into two smaller buddy segments powers of two and so on until a minimal buddy segment size is reached was well known as evidenced by Lehman, an artisan would have been motivated to use the buddy system of Lehman in the system of Collins. Thus, It would have been obvious to one of ordinary skill in the art, having the teachings of Collins and Lehman before him at the time the invention was made, to modify the system of Collins to include the buddy system of Lehman because it was well known to provide a high performance space management system

Art Unit: 2188

that can operate on a wide range of block sizes, thereby allocating and freeing the blocks with great efficiency (col. 1, lines 24-28) as taught by Lehman.

As per claim 3, Collins discloses the step of receiving the request to create a partition includes receiving a request to create a partition of an arbitrary size, and adopting, as the requested size, a size of m to the n -th power, where n is at a minimum that meets the size of the received request [col. 4, lines 55-57].

As per claim 6, Collins discloses a storage medium containing a computer program for causing a computer to execute actions comprising receiving a request to create a partition having a requested size of 2 to n -th power, where n is a natural number [col. 4, lines 50-53]; and referring to a table containing disposition information concerning a partition in a storage device [*free list 302*; Fig. 3; col. 5, lines 50-53], determining whether there is an empty region in the storage device having a size equal to the requested size based on the disposition information and, if so, disposing the partition in that empty region [col. 5, lines 35-49]; and disposing the partition in a region where a partition can be created, the region being a position aligned with the requested size when there is neither a region having the requested size nor a region having $2k$ times the requested size [col. 5, lines 9-22, 57-63].

However, Collins does not specifically teach determining, based on the disposition information, whether there is an empty region having a size $2k$ times as large as the

requested size (where k is a natural number) when an empty region having the requested size does not exist, and, if so, successively dividing that empty region by 2 until the size of the divided empty region becomes equal to the requested size, and disposing the partition in the divided region of the storage device as recited in the claim.

Lehman discloses a binary buddy system for allocating and freeing blocks wherein each of the buddy segments can be subdivided into two smaller buddy segments and so on until a minimal buddy segment size is reached. All buddy segments are powers of two to provide a high performance space management system that can operate on a wide range of block sizes, thereby allocating and freeing the blocks with great efficiency (col. 1, lines 24-61). Since the technology for implementing the division of the buddy segments into two smaller buddy segments powers of two and so on until a minimal buddy segment size is reached was well known as evidenced by Lehman, an artisan would have been motivated to use the buddy system of Lehman in the system of Collins. Thus, It would have been obvious to one of ordinary skill in the art, having the teachings of Collins and Lehman before him at the time the invention was made, to modify the system of Collins to include the buddy system of Lehman because it was well known to provide a high performance space management system that can operate on a wide range of block sizes, thereby allocating and freeing the blocks with great efficiency (col. 1, lines 24-28) as taught by Lehman.

As per claim 7, Collins discloses the step of receiving the request to create a partition includes receiving a request to create a partition of an arbitrary size, and

adopting, as the requested size, a size of m to the n -th power, where n is at a minimum that meets the size of the received request [col. 4, lines 55-57].

As per claim 10, Collins discloses an information processing apparatus, comprising means for receiving a request to create a partition having a requested size of 2 to n -th power, where n is a natural number [col. 4, lines 50-53]; and means for referring to a table containing disposition information concerning partitions in a storage device [*free list 302*; Fig. 3; col. 5, lines 50-53], for determining whether there is an empty region in the storage device having a size equal to the requested size, and for disposing the partition in that empty region [col. 5, lines 35-49]; and means for disposing the partition in a region where a partition can be created, the region being a position aligned with the requested size, when there is neither a region having the requested size nor a region having 2^k times as large as the requested size [col. 5, lines 9-22, 57-63].

However, Collins does not specifically teach determining, based on the disposition information, whether there is an empty region having a size 2^k times as large as the requested size (where k is a natural number) when an empty region having the requested size does not exist, and, if so, successively dividing that empty region by 2 until the size of the divided empty region becomes equal to the requested size, and disposing the partition in the divided region of the storage device as recited in the claim.

Lehman discloses a binary buddy system for allocating and freeing blocks wherein each of the buddy segments can be subdivided into two smaller buddy

segments and so on until a minimal buddy segment size is reached. All buddy segments are powers of two to provide a high performance space management system that can operate on a wide range of block sizes, thereby allocating and freeing the blocks with great efficiency (col. 1, lines 24-61). Since the technology for implementing the division of the buddy segments into two smaller buddy segments powers of two and so on until a minimal buddy segment size is reached was well known as evidenced by Lehman, an artisan would have been motivated to use the buddy system of Lehman in the system of Collins. Thus, It would have been obvious to one of ordinary skill in the art, having the teachings of Collins and Lehman before him at the time the invention was made, to modify the system of Collins to include the buddy system of Lehman because it was well known to provide a high performance space management system that can operate on a wide range of block sizes, thereby allocating and freeing the blocks with great efficiency (col. 1, lines 24-28) as taught by Lehman.

As per claim 11, Collins discloses said means for receiving a request is operable to receive a request to create a partition of an arbitrary size, and to adopt, as the requested size, a size of m to the n -th power, where n is at a minimum that meets the size of the received request [col. 4, lines 55-57].

As per claim 18, Collins discloses a storage device having a partition that is created according to a method comprising: receiving a request to create a partition having a requested size of 2 to n -th power, where n is a natural number [col. 4, lines 50-

53], referring to a table containing disposition information of partitions in the storage device [*free list 302*; Fig. 3; col. 5, lines 50-53], determining whether there is an empty region in the storage device having a size equal to the requested size based on the disposition information and, if so, disposing the partition in that empty region [col. 5, lines 35-49]; and disposing the partition in a region where a partition can be created, the region being a position that can be aligned with the requested size when there is neither a region having the requested size nor a region having $2k$ times the requested size [col. 5, lines 9-22, 57-63].

However, Collins does not specifically teach determining, based on the disposition information, whether there is an empty region having a size $2k$ times as large as the requested size (where k is a natural number) when an empty region having the requested size does not exist, and, if so, successively dividing that empty region by 2 until the size of the divided empty region becomes equal to the requested size, and disposing the partition in the divided region of the storage device as recited in the claim.

Lehman discloses a binary buddy system for allocating and freeing blocks wherein each of the buddy segments can be subdivided into two smaller buddy segments and so on until a minimal buddy segment size is reached. All buddy segments are powers of two to provide a high performance space management system that can operate on a wide range of block sizes, thereby allocating and freeing the blocks with great efficiency (col. 1, lines 24-61). Since the technology for implementing the division of the buddy segments into two smaller buddy segments powers of two and so on until a minimal buddy segment size is reached was well known as evidenced by

Lehman, an artisan would have been motivated to use the buddy system of Lehman in the system of Collins. Thus, It would have been obvious to one of ordinary skill in the art, having the teachings of Collins and Lehman before him at the time the invention was made, to modify the system of Collins to include the buddy system of Lehman because it was well known to provide a high performance space management system that can operate on a wide range of block sizes, thereby allocating and freeing the blocks with great efficiency (col. 1, lines 24-28) as taught by Lehman.

As per claim 19, Collins discloses the step of receiving the request to create a partition includes receiving a request to create a partition of an arbitrary size, and adopting, as the requested size, a size of m to the n -th power, where n is at a minimum that meets the size of the received request [col. 4, lines 55-57].

8. Claims 4, 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins et al. (US6,490,670) and Lehman (US6,032,160) and further in view of Murray et al. (US6,185,666).

As per claims 4, 8 and 12, the combination of Collins and Lehman discloses the claimed invention as detailed above in the previous paragraphs. However, Collins and Lehman do not specifically teach the steps of claims, 4, 8 and 12 recited below.

Murray discloses receiving information specifying a partition to be deleted [col. 3, lines 55-61]; and referring to a table containing disposition information concerning the

partition in the storage device [*partition table 406*; Fig. 4; col. 6, lines 45-49], and determining whether a region before or after the partition to be deleted is an empty region, and whether a region obtained by combining the empty region and the partition to be deleted can be aligned with a total size of the empty region and the partition to be deleted, and, if so, combining the empty region and a region having the partition deleted therefrom [col.20, lines 48-65] to provide improved tools and techniques for combining partitions (col. 4, lines 29-30).

Since the technology for implementing the steps of claims 4, 8 and 12 was well known as evidenced by Murray, an artisan would have been motivated to implement the steps of claims 4, 8 and 12 in the systems of Collins and Lehman. Thus, It would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the system of Collins and Lehman to include the steps of claims 4, 8 and 12 because it was well known to provide improved tools and techniques for combining partitions (col. 4, lines 29-30) as taught by Murray.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant is required under 37 C.F.R. § 1.111 (c) to consider these references fully when responding to this action. The documents cited therein teach partition creating, partition deleting, partition aligning and allocating blocks by dividing the segments by 2 until the requested size is reached.

Art Unit: 2188

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pierre M. Vital whose telephone number is (571) 272-4215. The examiner can normally be reached on Mon-Fri, 8:30 am - 6:00 pm, alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (571) 272-4210. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2188

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 14, 2004


Pierre M. Vital
Examiner
Art Unit 2188